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BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

Application Number: 10/759,346
Filing Date: January 15, 2004
Appellant(s): SZPAK ET AL.

Peter Szpak
For Appellant

EXAMINER'S ANSWER

This is in response to the appeal brief filed 12/20/10 appealing from the Office action mailed 3/30/10.

(1) Real Party in Interest

The examiner has no comment on the statement, or lack of statement, identifying by name the real party in interest in the brief.

(2) Related Appeals and Interferences

The examiner is not aware of any related appeals, interferences, or judicial proceedings which will directly affect or be directly affected by or have a bearing on the Board's decision in the pending appeal.

(3) Status of Claims

The following is a list of claims that are rejected and pending in the application:

Claims 1-29 and 33-61 are pending.

Claims 1-29 and 33-61 are rejected.

(4) Status of Amendments After Final

The examiner has no comment on the appellant's statement of the status of amendments after final rejection contained in the brief.

(5) Summary of Claimed Subject Matter

The examiner has no comment on the summary of claimed subject matter contained in the brief.

(6) Grounds of Rejection to be Reviewed on Appeal

The examiner has no comment on the appellant's statement of the grounds of rejection to be reviewed on appeal. Every ground of rejection set forth in the Office action from which the appeal is taken (as modified by any advisory actions) is being maintained by the examiner except for the grounds of rejection (if any) listed under the subheading "WITHDRAWN REJECTIONS." New grounds of rejection (if any) are provided under the subheading "NEW GROUNDS OF REJECTION."

(7) Claims Appendix

The examiner has no comment on the copy of the appealed claims contained in the Appendix to the appellant's brief.

(8) Evidence Relied Upon

5,522,073	Courant et al.	5-1996
6880130	Makowski et al.	4-2005

(9) Grounds of Rejection

The following ground(s) of rejection are applicable to the appealed claims:

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 1-29, and 33-61 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hayles US Patent 7,134,109 in view of Courant et al. ("Courant" US Patent No. 5,522,073) further in view of Makowski US Patent 6,880,130.

Regarding independent claim 1, Hayles A method for controlling model execution in a graphical modeling environment, said method comprising:

displaying a view of an executable graphical model with a plurality of executable time-based components, said executable graphical model including at least one user-configurable, executable graphical post component having at least one input port for receiving at least one input signal, (see Hayles, fig. 8 and fig. 9 col. 17, lines 25-col. 22, lines 20)

logically associating at least one executable time-based component with said event; identifying when said condition is satisfied during execution of said executable graphical model; (see Hayles, col. 17, lines 25-col. 22, lines 20)

posting, using said executable graphical post component, said event by informing an event handler said notice of an occurrence of said event in said graphical modeling environment; (see Hayles, col. 17, lines 25-col. 22, lines 20)

notifying said at least one executable time-based component that is logically associated with said event of said occurrence of said event, said occurrence of said event triggering an execution of said at least one executable time-based component; (see Hayles, col. 17, lines 25-col. 22, lines 20)and

executing said at least one executable time-based component in response to said notifying as opposed to in response to a specific point in time. (see Hayles, col. 17, lines 25-col. 22, lines 20)

However, Hayles does not explicitly teach said executable graphical post component being configured to post an event when a condition associated with said at least one input signal of said executable graphical post component is satisfied;

Courant teaches executable graphical post component being configured to post an event when a condition associated with said at least one input signal of said executable graphical post component is satisfied; (see Courant; col. 2, lines 20-50)

It would have been obvious to an artisan at the time of the invention to integrate the event manager of Courant into the graphical modeling environment of Hayles. Said artisan would have been motivated to combine Courant into Hayles to give the user greater flexibility to select specific functions related to the event (i.e. see col. 2 line 33 et seq. of Courant).

However, they fail to teach executing within said graphical modeling environment during a simulation of said executable graphical model.

Makowski teaches executing within said graphical modeling environment during a simulation of said executable graphical model. (see Makowski, col. 13, lines 25-40)

It would have been obvious to an artisan at the time of the invention to integrate the modeling environment of Makowski into the graphical modeling environment of Hayles. Said artisan would have been motivated to combine Makowski into Hayles to allow user to simulate the industrial environment.

Regarding dependent claim 2, Hayles, in combination with Courant and Makowski teaches the method of claim 1, comprising the further steps of: registering at least one of said plurality of components with said event handler; and receiving at the at least one of said plurality of components registering with said event handler, notification of the occurrence of said event following said posting (i.e. compare "MESSAGE CONNECTOR", "EVENT SERVER" and "EXECUTION MANAGER" in FIG. 5 et seq. of Courant).

Regarding dependent claim 3, Hayles, in combination with Courant and Makowski teaches the method of claim 1, wherein the graphical post component is a block or label (see Hayles, fig. 8 and fig. 9 col. 17, lines 25-col. 22, lines 20).

Regarding dependent claim 4, Hayles, in combination with Courant and Makowski teaches the method of claim 1, comprising the further step of: setting a sample time for the initial execution of at least one component to be the occurrence of the specified event (see Hayles, fig.

8 and fig. 9 col. 17, lines 25-col. 22, lines 20).

Regarding dependent claim 5, Hayles, in combination with Courant and Makowski teaches the method of claim 4, comprising the further step of: propagating the sample time to at least one other component in said model, said at least one other component configured to inherit a sample rate (see Hayles, fig. 8 and fig. 9 col. 17, lines 25-col. 22, lines 20).

Regarding dependent claim 6, Hayles, in combination with Courant and Makowski teaches the method of claim 4, comprising the further step of: setting a sample time of a plurality of non-contiguous components in said model to be the occurrence of said event (see Hayles, fig. 8 and fig. 9 col. 17, lines 25-col. 22, lines 20).

Regarding dependent claim 7, Hayles, in combination with Courant and Makowski teaches the method of claim 6 wherein said sample time for the plurality of non\- contiguous components is set without adjusting visible connections between components displayed in said view (see Hayles, fig. 8 and fig. 9 col. 17, lines 25-col. 22, lines 20).

Regarding dependent claim 8, Hayles, in combination with Courant and Makowski teaches the method of claim 4, comprising the further step of: indicating with an event ID in said view that the sample time of said at least one component is set to said event (see Hayles, fig. 8 and fig. 9 col. 17, lines 25-col. 22, lines 20).

Regarding dependent claim 9, Hayles, in combination with Courant and Makowski teaches the method of claim 4 wherein said event is an explicit event set by a user (see Hayles, fig. 8 and fig. 9 col. 17, lines 25-col. 22, lines 20).

Regarding dependent claim 10, Hayles, in combination with Courant and Makowski teaches the method of claim 4 wherein said event is an implicit event caused by the execution of the model (see Hayles, fig. 8 and fig. 9 col. 17, lines 25-col. 22, lines 20).

Regarding dependent claim 11, Hayles, in combination with Courant and Makowski teaches the method of claim 10 wherein the implicit event is one of power-up, power-down and initialization (see Hayles, fig. 8 and fig. 9 col. 17, lines 25-col. 22, lines 20).

Regarding dependent claim 12, Hayles, in combination with Courant and Makowski teaches the method of claim 10 wherein the implicit event corresponds to one of the enabling and disabling of a subsystem (see Hayles, fig. 8 and fig. 9 col. 17, lines 25-col. 22, lines 20).

Regarding dependent claim 13, Hayles, in combination with Courant and Makowski teaches the method of claim 2, comprising the further step of: indicating which event a component receives with a user-configurable color in said view (see Hayles, col. 7, lines 3-20)

Regarding dependent claim 14, Hayles, in combination with Courant and Makowski teaches the method of claim 1, wherein an execution scope Of the specified event for which the

execution of the model is being monitored is restricted to a portion of the model (see Hayles, fig. 8 and fig. 9 col. 17, lines 25-col. 22, lines 20).

Regarding dependent claim 15, Hayles, in combination with Courant and Makowski teaches the method of claim 1 wherein each event in said model maps on a one-to-one basis to an event handler, said event handler being a function (see Hayles, fig. 8 and fig. 9 col. 17, lines 25-col. 22, lines 20).

Regarding dependent claim 16, Hayles, in combination with Courant and Makowski teaches the method of claim 15 wherein said function is inlined (see Hayles, fig. 8 and fig. 9 col. 17, lines 25-col. 22, lines 20).

Regarding dependent claim 17, Hayles, in combination with Courant and Makowski teaches the method of claim 1 wherein a branch priority block indicates an order of execution among at least two branches of blocks in response to said notifying (see Hayles, fig. 8 and fig. 9 col. 17, lines 25-col. 22, lines 20).

Regarding dependent claim 18, Hayles, in combination with Courant and Makowski teaches the method of claim 1 wherein more than one block group executes in response to said notifying, said block groups being a user selected grouping of blocks, the order of execution of the block groups specified by a user (see Hayles, fig. 8 and fig. 9 col. 17, lines 25-col. 22, lines 20).

Regarding independent claim 19, it is rejected under the same rationale as claim 1. Supra and

Courant further teaches interrupting execution of an executing event in response to the determination of the occurrence of said specified event; and performing an operation in said model in response to the determination of the occurrence of the specified event (i.e. "EVENT SERVER" and "EXECUTION MANAGER" in FIG. 5 et seq. of Courant).

Regarding dependent claim 20, Hayles, in combination with Courant and Makowski teaches the method of claim 19 wherein said specified event is treated as a normal event and comprising the further step of: resuming execution of the interrupted event (see Hayles, fig. 8 and fig. 9 col. 17, lines 25-col. 22, lines 20).

Regarding dependent claim 21, Hayles, in combination with Courant and Makowski teaches the method of claim 19 wherein said specified event is treated as an exception event and comprising the further step of: returning control of the execution of the model to a calling process which called the interrupted executing event without resuming execution of said interrupted event (see Hayles, fig. 8 and fig. 9 col. 17, lines 25-col. 22, lines 20).

Regarding dependent claim 22, Hayles, in combination with Courant and Makowski teaches the method of claim 19 wherein said specified event is specified using an instantiated event object (see Hayles, fig. 8 and fig. 9 col. 17, lines 25-col. 22, lines 20).

Regarding dependent claim 23, Hayles, in combination with Courant and Makowski teaches the method of claim 22 wherein said event is an explicit event (see Hayles, fig. 8 and fig. 9 col. 17, lines 25-col. 22, lines 20).

Regarding dependent claim 24, Hayles, in combination with Courant and Makowski teaches the method of claim 22 wherein said event is an implicit event (see Hayles, fig. 8 and fig. 9 col. 17, lines 25-col. 22, lines 20).

Regarding dependent claim 25, Hayles, in combination with Courant and Makowski teaches the method of claim 22 wherein said event object is associated with a task object, said task object corresponding to an operating system task (see Hayles, fig. 8 and fig. 9 col. 17, lines 25-col. 22, lines 20).

Regarding dependent claim 26, Hayles, in combination with Courant and Makowski teaches the method of claim 25 wherein said task object has at least one of a specified execution rate and priority (see Hayles, fig. 8 and fig. 9 col. 17, lines 25-col. 22, lines 20).

Regarding dependent claim 27, Hayles, in combination with Courant and Makowski teaches the method of claim 26 wherein at least two events with different tasks are executing in a model and comprising the further step of: using event transition components to schedule the execution of components associated with said at least two events, said event transition components separating the execution of said components associated with said at least two events

(see Hayles, fig. 8 and fig. 9 col. 17, lines 25-col. 22, lines 20).

Regarding dependent claim 28, Hayles, in combination with Courant and Makowski teaches the method of claim 19 wherein the operation is controlled by an order of execution indicated in a branch priority block (see Hayles, fig. 8 and fig. 9 col. 17, lines 25-col. 22, lines 20).

Regarding dependent claim 29, Hayles, in combination with Courant and Makowski teaches the method of claim 19 wherein the operation is the execution of more than one block group, said block groups being a user selected grouping of blocks, the order of execution of the block groups specified by a user (see Hayles, fig. 8 and fig. 9 col. 17, lines 25-col. 22, lines 20).

Regarding independent claim 33, it is rejected under the same rationale as claim 1. Supra.

Claim 34 is similar in scope to claim 2, and is therefore rejected under similar rationale.

Claim 35 is similar in scope to claim 3, and is therefore rejected under similar rationale.

Claim 36 is similar in scope to claim 4, and is therefore rejected under similar rationale.

Claim 37 is similar in scope to claim 5, and is therefore rejected under similar rationale.

Claim 38 is similar in scope to claim 6, and is therefore rejected under similar rationale.

Claim 39 is similar in scope to claim 7, and is therefore rejected under similar rationale.

Claim 40 is similar in scope to claim 8, and is therefore rejected under similar rationale.

Claim 41 is similar in scope to claim 9, and is therefore rejected under similar rationale.

Claim 42 is similar in scope to claim 10, and is therefore rejected under similar rationale.

Claim 43 is similar in scope to claim 11 and is therefore rejected under similar rationale.

Claim 44 is similar in scope to claim 12, and is therefore rejected under similar rationale.

Claim 45 is similar in scope to claim 13, and is therefore rejected under similar rationale.

Claim 46 is similar In scope to claim 14, and is therefore rejected under similar rationale.

Claim 47 is similar in scope to claim 15, and is therefore rejected under similar rationale.

Claim 48 is similar in scope to claim 16, and is therefore rejected under similar rationale.

Claim 49 is similar in scope to claim 17, and is therefore rejected under similar rationale.

Claim 50 is similar in scope to claim 18, and is therefore rejected under similar rationale.

Claim 51 is similar in scope to claim 19, and is therefore rejected under similar rationale.

Claim 52 is similar in scope to claim 20, and is therefore rejected under similar rationale.

Claim 53 is similar in scope to claim 21, and is therefore rejected under similar rationale.

Claim 54 is similar in scope to claim 22, and is therefore rejected under similar rationale.

Claim 55 is similar in scope to claim 23, and is therefore rejected under similar rationale.

Claim 56 is similar in scope to claim 24, and is therefore rejected under similar rationale.

Claim 57 is similar in scope to claim 25, and is therefore rejected under similar rationale.

Claim 58 is similar in scope to claim 26, and is therefore rejected under similar rationale.

Claim 59 is similar in scope to claim 27, and is therefore rejected under similar rationale.

Claim 60 is similar in scope to claim 28, and is therefore rejected under similar rationale.

Claim 61 is similar in scope to claim 29, and is therefore rejected under similar rationale.

(10) Response to Argument

Appellant's argument focused on the following:

A) Whether the combination of Hayles, Courant, and Makowski teaches a "time-based component?"

A) The combination teaches this limitation because Hayles teaches a time-based component that provides signal inputs when specific time is trigger. (see Hayles, fig. 8, col. 17, lines 25-55) Hayles' time-based component is the same as that is defined in appellant's specification. Appellant defines it to be a "block represent a dynamic system whose inputs, states, and output can change continuously and or discretely at specific point in time." (see Appellant's specification, page 1, lines 21-27; col. 27, lines 5-45) Hayles' time-based component is a block that represent inputs that changes at specific time, therefore the combination teaches a "time-based component."

B) Whether the combination of Hayles, Courant, and Makowski teaches a "post component?"

B) The combination teaches this limitation because Hayles teaches posting an input when a specific time is trigger. (see Hayles, col. 17, lines 35-42) Therefore, the combination teaches a "post component."

C) Whether the combination of Hayles, Courant, and Makowski associates "a time-based component with an event?"

C) The combination teaches this limitation because Courant teaches associating a event with a condition; (see Courant, col. 2 ,lines 30-48) and Hayles teaches a time-based component

that trigger specific input (see Hayles, fig. 8, col. 17, lines 25-55) Therefore the combination teaches associating a time-based component with an event.

D) Whether the combination of Hayles, Courant and Makowski executes "at least executable time-based component in response to said notifying as opposed to in response to a specific point in time?"

D) Hayles teaches this limitation because it uses an AL Sample Clock to specify signal pulse. (see Hayles, col. 24, lines 10-20) By specifing signal pulse, Hayles is notifying the system of the time cycle. (see Hayles, col. 24, lines 10-20) Therefore, Hayles teaches executing "at least executable time-based component in response to said notifying as opposed to in response to a specific point in time."

E) Whether it is obvious to combine Hayles, Courant, and Makowski?

E) "Section 103 forbids issuance of a patent when 'the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains.'" KSR Int'l Co. v.Teleflex Inc., 127 S. Ct. 1727, 1734 (2007). In KSR, the Supreme Court emphasized "the need for caution in granting a patent based on the combination of elements found in the prior art,"Id, at 1739, and discussed circumstances in which a patent might be determined to be obvious. KSR, 127 S. Ct. at 1739 (citing Graham v. JohnDeere Co., 383 U.S. 1, 12 (1966)). The Court reaffirmed principles based on its precedent that "[t]he combination of familiar elements according to known methods is likely to be obvious when it does no more than yield predictable results." Id. The operative question in this "functional approach" is thus "whether the improvement is more than the predictable use of prior art elements according to their established functions." Id. at 1740. The Federal Circuit recently recognized that "[a]n obviousness determination is not the result of a rigid formula disassociated from the consideration of the facts of a case. Indeed, the common sense of those skilled in the art demonstrates why some combinations would have been obvious where others would not." Leapfrog Enters., Inc. v. Fisher-Price, Inc., 485 F.3d 1157, 1161 (Fed. Cir. 2007) (citing KSR, 127 S. Ct. 1727, 1739 (2007)). The Federal Circuit relied in part on the fact that Leapfrog had presented no evidence that the inclusion of a reader in the combined device was "uniquely challenging or difficult for one of ordinary skill in the art" or "represented an unobvious step over the prior art." Id. (citing KSR,127 S. Ct. at 1740-41).

In the present case, the combination of Hayles and Courant is obvious to one of ordinary skilled in the art because Hayles already teaches triggering an input to a component based on specific a timing condition. (see Hayles, fig. 8, col. 17, lines 25-55) However, Hayles does not specifically define this interaction as an event. Courant teaches triggering an event with a condition. (see Courant, col. 2 ,lines 30-48) Therefore, it is would be obvious for Hayles to allow user to define the action of inputting signal to a component as an event.

The combination of Hayles and Makowski is obvious to one of ordinary skilled in the art because Hayles and Makowski teach a similar hardware controlling environment. (see Hayles, abstract, Makowski, abstract) Although, Hayles does not specifically teaches simulating user instructions, as it is taught in Makowski, (see Makowski, col. 13, lines 25-40) it would been obvious to combine the two teachings to provide user a projection of the results before execution.

F) Whether the combination of Hayles, Courant and Makowski teaches interrupting execution of an executing event in response to said posting of said specified event?

F) Hayles teaches this limitation because it would interpret an execution process with a waiting period for a posting of an input. (see Hayles col. 26, lines 40-col. 27, lines 5) Therefore the combination teaches interrupting execution of an executing event in response to said posting of said specified event.

(11) Related Proceeding(s) Appendix

No decision rendered by a court or the Board is identified by the examiner in the Related Appeals and Interferences section of this examiner's answer.

For the above reasons, it is believed that the rejections should be sustained.

Respectfully submitted,

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